

WHAT IS CLAIMED IS

1. A hydrophilic surface coated with a surfactant composition comprising:  
a surfactant component from about 0.2% to 0.6%;  
5 a stabilizer component from about 0.05% to 0.5%; and  
a solvent;  
wherein the surfactant composition free of the solvent when dried and coated on a  
substrate comprises the surfactant and stabilizer in a ratio of 0.2:1 to 12:1 wt/wt; and  
wherein the hydrophilic characteristics indicated by a Spreading Drop Test retaining at  
10 least 85% of the original spreading drop diameter after 3 weeks of aging at 23°C and  
50% relative humidity.
2. The surfactant composition of claim 1 wherein the solvent comprises a mixture  
of water and alcohol.
- 15 3. The surfactant composition of claim 2 wherein the alcohol is selected from the  
group consisting of methanol, ethanol, 1-propanol, 2-propanol, and butanol.
4. The surfactant composition of claim 1 wherein the surfactant component is a  
20 liquid at temperatures below 25 °C.
5. The surfactant composition of claim 1 wherein the surfactant component is a  
nonionic surfactant.
- 25 6. The surfactant composition of claim 5 wherein the surfactant component is  
selected from the group consisting of alkoxylated alkyl diol; alkoxylated alkyacetylenic  
diol; alkoxylated glycerin monoester of an alkyl alcohol; alkoxylated glycerin  
monoester of an aralkyl alcohol; alkoxylated alkyl alcohol; polyalkoxylated aralkyl  
alcohol; silicone copolyol; polyethoxylated phenol; a fatty acid ester of a  
30 polyalkoxylated diol; a fatty acid ester of a polyalkoxylated triol, and polyalkoxylated  
perfluoroalkyl-containing surfactant.

7. The surfactant composition of claim 1 wherein the surfactant component is an ethoxylated acetylenic diol.
8. The surfactant composition of claim 1 wherein the stabilizer component has a melting point greater than 25 °C.
9. The surfactant composition of claim 8 wherein the stabilizer component has a melting point of at least 45 °C.
10. The surfactant composition of claim 1 wherein the stabilizer component is selected from the group consisting of anionic perfluoroalkyl-containing surfactant; alkyl, aralkyl or alkaryl sulfonate; alkyl, aralkyl or alkaryl sulfate; alkyl, aralkyl or alkaryl phosphonate; alkyl, aralkyl or alkaryl phosphate; aralkyl or alkaryl phosphonate; alkyl, aralkyl or alkaryl betaine; aralkyl or alkaryl phosphonate sultaine; and fatty imidazolines and derivatives thereof.
11. The surfactant composition of claim 10 wherein the stabilizer component is an aralkyl sulfonate.
12. The surfactant composition of claim 10 where the stabilizer component is an alkali metal salt of dodecylbenzene sulfonate.
13. The surfactant composition of claim 1 wherein the hydrophilic characteristics indicated by the spreading drop diameter retaining at least 90% of the original drop diameter after 3 weeks of aging at 23 °C and 50% relative humidity.
14. The surfactant composition of claim 1 wherein the hydrophilic characteristics indicated by the spreading drop diameter retaining at least 95% of the original drop diameter after 3 weeks of aging at 23 °C and 50% relative humidity.
15. A coating applied on a non-porous substrate comprising a surfactant component and a stabilizer component in a ratio of 0.2:1 to 12:1 wt/wt wherein the hydrophilic

characteristics indicated by the spreading drop diameter retaining at least 85% of the original drop diameter after 3 weeks of aging at 23 °C and 50% relative humidity.

5        16.     The coating of claim 15 wherein the surfactant component is a liquid at temperatures below 25 °C.

10       17.     The coating of claim 15 wherein the surfactant component is a nonionic surfactant.

15       18.     The coating of claim 17 wherein the surfactant component is selected from the group consisting of alkoxyated alkyl diol; alkoxyated alkyacetylenic diol; alkoxyated glycerin monoester of an alkyl alcohol; alkoxyated glycerin monoester of an aralkyl alcohol; alkoxyated alkyl alcohol; polyalkoxyated aralkyl alcohol; silicone copolyol; polyethoxyated phenol; a fatty acid ester of a polyalkoxyated diol; a fatty acid ester of a polyalkoxyated triol, and polyalkoxyated perfluoroalkyl-containing surfactant.

20       19.     The coating of claim 18 wherein the surfactant component is an ethoxyated acetylenic diol.

20.     The coating of claim 15 wherein the stabilizer component has a melting point greater than 25 °C.

25       21.     The coating of claim 15 wherein the stabilizer component is a selected from the group consisting of anionic perfluoroalkyl-containing surfactant; alkyl, aralkyl or alkaryl sulfonate; alkyl, aralkyl or alkaryl sulfate; alkyl, aralkyl or alkaryl phosphonate; alkyl, aralkyl or alkaryl phosphate; alkyl, aralkyl or alkaryl betaine; alkyl, aralkyl or alkaryl sultaine; and fatty imidazolines and derivatives thereof.

30       22.     The coating of claim 21 wherein the stabilizer component is an alkali metal salt of dodecylbenzene sulfonate.

23. The coating of claim 13 wherein the hydrophilic characteristics indicated by the spreading drop diameter retaining at least 90% of the original drop diameter after 3 weeks of aging at 23 °C and 50% relative humidity in a recirculated chamber.
- 5 24. The coating of claim 13 wherein the substrate is a film.
25. A microfluidic device for exposure to body fluids, comprising  
a substrate;  
a coating comprising a surfactant component from about 25% to 95% by weight  
10 on a solvent-free basis and a stabilizer component from about 5% to 75% by weight on a solvent-free basis;  
wherein the contact angle of the coating does not exceed 25 degrees after aging for thirteen weeks at 25 °C.
- 15 26. A hydrophilic surface coated with a surfactant composition comprising:  
a surfactant component from about 0.2% to 0.6%;  
a stabilizer component from about 0.05% to 0.5%; and  
a solvent;  
wherein the surfactant composition free of the solvent when dried and coated on a  
20 substrate comprises the surfactant and stabilizer in a ratio of 0.2:1 to 12:1 wt/wt; and  
wherein the contact angle does not exceed 25 degrees after aging for thirteen weeks at 25 deg C.
- 25 27. A method of making a hydrophilic surface on a substrate, comprising:  
Combining a surfactant component from about 0.2% to 0.6%, a stabilizer  
component from about 0.05% to 0.5%; and a solvent to form a surfactant composition,  
Applying the surfactant composition to a substrate, and  
Drying the surfactant composition on the substrate,  
wherein the surfactant composition free of the solvent when dried and coated on a  
30 substrate comprises the surfactant and stabilizer in a ratio of 0.2:1 to 12:1 wt/wt and  
wherein the hydrophilic characteristics indicated by a Spreading Drop Test retain at least 85% of the original spreading drop diameter after 3 weeks of aging at 23°C and 50% relative humidity.

28. The method of claim 27, wherein the substrate is non-porous.
29. The method of claim 27, wherein the substrate is a film.